



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/657,244

09/09/2003

Narutoshi Fukuzawa

242334US0

4051

22850

7590

10/27/2009

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

GOMA, TAWFIK A

ART UNIT

PAPER NUMBER

2627

NOTIFICATION DATE

DELIVERY MODE

10/27/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* NARUTOSHI FUKUZAWA

---

Appeal 2009-005170  
Application 10/657,244<sup>1</sup>  
Technology Center 2600

---

Decided: October 23, 2009

---

Before KENNETH W. HAIRSTON, MARC S. HOFF, and THOMAS S.  
HAHN, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

---

<sup>1</sup> The real party in interest is TDK Corporation.

## STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from a Non-Final Rejection of claims 1-3 and 5-12. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Appellants' invention relates to an optical recording medium that includes a recording layer composed mainly of an organic compound such that blue-violet semiconductor laser light (390 to 420 nm wavelength) can be used as the recording/reproducing laser light. The monomethine cyanine dye used as the organic compound has a minimum value  $n_{\min}$  of its refractive index  $n$  within the range of 370 to 425 nm, and has a refractive index of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light. When absorbing the laser light, the dye melts or degrades to bring about a change in the refractive index, thereby effecting recording of the information (Spec. 1, 5-6).

Claim 1 is exemplary of the claims on appeal:

1. An optical recording medium comprising at least:
  - a supporting substrate;
  - a recording layer on the supporting substrate, the recording layer comprising at least one organic compound as a major component;
  - a dielectric layer on the recording layer; and
  - a light-transmitting layer on the dielectric layer, the light-transmitting layer having a thickness of 1 to 150  $\mu\text{m}$  and being capable of transmitting laser light with a wavelength of 390 to 420 nm for recording and reproducing information,wherein the at least one organic compound in the recording layer includes at least one monomethine cyanine dye that has the minimum value  $n_{\min}$  of its refractive index  $n$  (real part of the complex refractive index) within the range of 370 to 425 nm and has a refractive index  $n$  of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and the organic compound, when absorbing the laser light, melts or

degrades to bring about a change in the refractive index, thereby effecting recording of the information, and

wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, said two nitrogen-containing heterocyclic rings being selected from the group consisting of a combination of indolenine and indolenine, a combination of benzothiazole and benzothiazole, and a combination of benzothiazole and quinoline.

The Examiner relies upon the following prior art in rejecting the claims on appeal:

Yanagisawa	US 5,326,679	Jul. 5, 1994
Kasada	US 6,683,188 B1	Jan. 27, 2004 (filed Nov. 24, 2000)
Sabi	EP 1 103 962 A2	Nov. 23, 2000

Claims 1-3, 5, 7-9, 11, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasada in view of Sabi.

Claims 6 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasada in view of Sabi and Yanagisawa.

Throughout this decision, we make reference to the Appeal Brief (“App. Br.,” filed April 23, 2008), the Reply Brief (“Reply Br.,” filed September 9, 2008), and the Examiner’s Answer (“Ans.,” mailed July 11, 2008) for their respective details.

### ISSUE

Appellant argues that Kasada does not expressly teach a monomethine cyanine dye having a minimum value  $n_{\min}$  of its refractive index within the range of 370 to 425 nm (App. Br. 6), and that such a minimum value is also not inherent to monomethine cyanine dyes (Reply Br. 3). The Examiner

finds that because Kasada teaches the use of monomethine cyanine dye in its recording layer, the claimed characteristics of the dye are inherently present (Ans. 4).

Appellant's contentions present us with the following issue:

Has Appellant shown that the Examiner erred in finding that the combination of Kasada and Sabi teaches a monomethine cyanine dye having a minimum value  $n_{\min}$  of its refractive index within the range of 370 to 425 nm?

### FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

#### *The Invention*

1. According to Appellants, the invention concerns an optical recording medium that includes a recording layer composed mainly of an organic compound such that blue-violet semiconductor laser light (390 to 420 nm wavelength) can be used as the recording/reproducing laser light. The monomethine cyanine dye used as the organic compound has a minimum value  $n_{\min}$  of its refractive index  $n$  within the range of 370 to 425 nm and has a refractive index of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light. When absorbing the laser light, the dye melts or degrades to bring about a change in the refractive index, thereby effecting recording of the information (Spec. 1, 5-6).

2. Appellant's Specification provides examples of optical disks prepared using monomethine cyanine dyes according to his invention (Examples 1 and 2), as well as examples of optical disks prepared using

monomethine cyanine dyes *not* within the scope of Appellant's invention (Comparative Examples 1 and 2) (Spec. 35-38).

3. Appellant's Table 1 indicates that monomethine cyanine dye "a" of Comparative Example 1 displays a minimum value  $n_{\min}$  of its refractive index at a wavelength of 356 nm (Spec. 38).

*Kasada*

4. Kasada teaches organic dye compounds, specifically monomethine cyanine dyes, having their absorption maxima in a region ranging from the ultraviolet region to a relatively short wavelength visible region (Abstract).

5. Kasada is silent with respect to the wavelength corresponding to the minimum value  $n_{\min}$  of the refractive index of the dyes taught therein.

*Sabi*

6. Sabi teaches an optical recording medium in which the organic material will not be dissolved into an adjacent layer, and will perform accurate recording/reproducing (Abstract).

*Yanagisawa*

7. Yanagisawa teaches a writable recording medium containing two cyanine dyes, the second dye having an absorption band of a shorter wavelength region than that of the first dye (Abstract).

## PRINCIPLES OF LAW

On the issue of obviousness, the Supreme Court has stated that "the obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). Further, the Court stated "[t]he combination of

familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 419-420.

“It is well settled that a prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it. Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates.” *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002) (citations and internal quotation marks omitted). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations and internal quotation marks omitted).

## ANALYSIS

### CLAIMS 1-3, 5, 7-9, 11, AND 12

Claims 1 and 7, which are the independent claims pending in this application, each recites a monomethine cyanine dye being included in the organic compound in the recording layer, said monomethine cyanine dye having a refractive index of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and having a minimum value  $n_{\min}$  of its refractive index  $n$  within the range of 370 to 425 nm.

The Examiner finds that because Kasada teaches monomethine cyanine dyes, the dye properties recited in Appellant's claim are considered to be inherently present in the patent (Ans. 8).

Appellant argues that the minimum value  $n_{\min}$  of the refractive index of the present claims is not inherent in the monomethine cyanine dyes covered by Kasada's disclosure (Reply Br. 2-3). Appellant argues that the dyes of Chemical Formulae 2 and 5 of Kasada (col. 5, ll. 15-20 and 46-51) are substantially similar to monomethine cyanine dye "a" of Appellant's Comparative Example 1 (*see* Spec. 38), which has a value of  $n_{\min}$  at a wavelength outside the claimed range. According to Appellant, that substantial similarity means that the dyes of Formulae 2 and 5 would be expected to have a similar value of  $n_{\min}$  (Reply Br. 3).

We agree with Appellant. Appellant's Specification provides examples of optical disks prepared using monomethine cyanine dyes according to his invention (Examples 1 and 2), as well as examples of optical disks prepared using monomethine cyanine dyes *not* within the scope of Appellant's invention (Comparative Examples 1 and 2) (FF 2). Appellant's Table 1 indicates that monomethine cyanine dye "a" of Comparative Example 1 displays a minimum value  $n_{\min}$  of its refractive index at a wavelength of 356 nm, which is outside the claimed range of 370 to 425 nm (FF 3). Appellant has thus provided evidence that the minimum value  $n_{\min}$  of the refractive index of a monomethine cyanine dye does not *necessarily* occur within the claimed range of 370 to 425 nm. *See In re Robertson*, 169 F.3d at 745. Thus, we find that the Examiner erred in finding that a wavelength for  $n_{\min}$  within the claimed range is inherent to the monomethine cyanine dye taught by Kasada.



Because Kasada does not teach, expressly or inherently, that its monomethine cyanine dyes display a wavelength for  $n_{\min}$  within the claimed range, we find that the Examiner has failed to establish the prima facie obviousness of claims 1-3, 5, 7-9, 11, and 12 over the combination of Kasada and Sabi. Thus, we will not sustain the rejection of claims 1-3, 5, 7-9, 11, and 12 under 35 U.S.C. § 103(a).

#### CLAIMS 6 AND 10

As noted *supra*, we reverse the rejection of claims 1 and 7, from which claims 6 and 10 depend respectively. We have reviewed Yanagisawa, and find that it does not remedy the deficiencies we noted with respect to the combination of Kasada and Sabi. Thus, we will reverse the rejection of claims 6 and 10 under § 103, for the same reasons expressed *supra* with respect to parent claims 1 and 7.

#### CONCLUSION OF LAW

Appellants have shown that the Examiner erred in finding that the combination of Kasada and Sabi teaches a monomethine cyanine dye having a minimum value  $n_{\min}$  of its refractive index within the range of 370 to 425 nm.

Appeal 2009-005170  
Application 10/657,244

ORDER

The Examiner's rejection of claims 1-3 and 5-12 is reversed.

REVERSED

ELD

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314